

Preliminary Amendment

Applicant: Horst Groeninger
Serial No.: Not yet assigned
(Priority Application No. 10 2004 007 696.0)
(International Application No. PCT/DE2005/000216)
Filed: Herewith
(Priority Date: 16 February 2004)
(International Filing Date: 9 February 2005)
Docket No.: I431.172.101/FIN574PCT/US
Title: TEST APPARATUS FOR TESTING A SEMICONDUCTOR DEVICE, AND METHOD FOR
TESTING THE SEMICONDUCTOR DEVICE (as amended)

IN THE CLAIMS

Please cancel claims 1-24 without prejudice.

Please add claims 25-48 as follows:

WHAT IS CLAIMED IS:

1.-24. (Cancelled)

25. (New) A test apparatus for testing a semiconductor device having contact pads on its top and contact pads on its back, where the test apparatus comprising:

a test printed circuit board having contact pads;

a test socket mounted on the test printed circuit board, where the test socket has a locating seat for locating the top of the semiconductor device, and where the region of the locating seat contains internal through-contact elements through the test socket to the test printed circuit board in order to make an electrical connection between the contact pads of the top of the semiconductor device and the contact pads of the test printed circuit board;

a stamp for pressing the semiconductor device onto the internal through-contact elements of the test socket; and

where the test socket has external through-contact elements which are arranged outside of the locating seat and which make an electrical connection between contact pads on the test printed circuit board and contact pads on the back of the semiconductor device to be tested when the stamp is pressed on.

26. (New) The test apparatus as claimed in claim 25, comprising when the stamp is pressed on, the contact pads of the back of the semiconductor device are electrically connected to contact pads on the test printed circuit board via through-contact elements of a holding part and via rewiring lines of a wiring part, and also via the external through-contact elements in the test socket.

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27. (New) The test apparatus as claimed in claim 26, comprising where the stamp has, in a direction of the back of the semiconductor device to be tested, the wiring part and the holding part with through-contact elements for making contact with the contact pads on the back of the semiconductor device.
28. (New) The test apparatus as claimed in claim 26, comprising where the wiring part of the stamp has rewiring lines from the positions of the through-contact elements of the holding part to positions of the external through-contact elements in the test socket.
29. (New) The test apparatus as claimed in claim 25, comprising the through-contact elements having through-contact pins that have spring-guided test tips that project from a top and a bottom, opposite the top, of the respective device component of the test apparatus.
30. (New) The test apparatus as claimed in claim 25, comprising the through-contact elements having a tubular central piece which has test tips at its ends, with a spring element arranged in the central piece elastically cushioning the test tips.
31. (New) The test apparatus as claimed in claim 25, comprising the stamp is configured for simultaneously pressing the through-contact elements onto the contact pads of the back of the semiconductor device, the external through-contact elements of the test socket onto the test printed circuit board, and the internal through-contact elements of the test socket onto the test printed circuit board and onto the contact pads of the top of the semiconductor device.
32. (New) The test apparatus as claimed in claim 25, comprising where the stamp is fitted on a pivot arm that pivots the stamp into a test position in which the pivot arm having the stamp is oriented such that the through-contact elements are simultaneously pressed against the provided contact points of the test apparatus and of the semiconductor device.

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33. (New) The test apparatus as claimed in claim 26, comprising where the wiring part on the stamp is fitted interchangeably.

34. (New) The test apparatus as claimed in claim 26, comprising where the holding part on the wiring part is fitted interchangeably.

35. (New) The test apparatus as claimed in claim 25, comprising where the locating seat has a central opening which corresponds to an optical sensor region of the semiconductor device and which is accessible from outside of the test apparatus.

36. (New) The test apparatus as claimed in claim 25, comprising where the opening is an irradiation opening which allows the semiconductor device to be irradiated.

37. (New) A method for testing a semiconductor device having contact pads on its top and its back, the method comprising:

providing a test apparatus as claimed in claim 25;

equipping the test apparatus with a test socket which has a locating seat matching the semiconductor device to be tested and with a stamp which has a holding part and a wiring part which match the semiconductor device to be tested;

fitting the test socket of the test apparatus with the semiconductor device to be tested by putting the top of the semiconductor device onto the locating seat of the test socket; and

pressing the stamp with the wiring part and the holding part onto the back of the semiconductor device to make contact with the contact pads, provided for a test, on the top and the back of the semiconductor device using the through-contact elements of the test apparatus to make electrical connections to the test printed circuit board.

38. (New) A test apparatus for testing a semiconductor device having contact pads on its top and contact pads on its back, where the test apparatus comprising:

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a test socket mounted on a test printed circuit board, where the test socket has a locating seat for locating the top of the semiconductor device, and where the region of the locating seat contains internal through-contact elements through the test socket to the test printed circuit board in order to make an electrical connection between the contact pads of the top of the semiconductor device and the contact pads of the test printed circuit board;

a stamp; and

where the test socket has external through-contact elements which are arranged outside of the locating seat and which make an electrical connection between contact pads on the test printed circuit board and contact pads on the back of the semiconductor device.

39. (New) The test apparatus as claimed in claim 38, comprising when the stamp is pressed on, the contact pads of the back of the semiconductor device are electrically connected to contact pads on the test printed circuit board via through-contact elements of a holding part and via rewiring lines of a wiring part, and also via the external through-contact elements in the test socket.

40. (New) The test apparatus as claimed in claim 39, comprising where the stamp has, in a direction of the back of the semiconductor device to be tested, the wiring part and the holding part with through-contact elements for making contact with the contact pads on the back of the semiconductor device.

41. (New) The test apparatus as claimed in claim 39, comprising where the wiring part of the stamp has rewiring lines from the positions of the through-contact elements of the holding part to positions of the external through-contact elements in the test socket.

42. (New) The test apparatus as claimed in claim 38, comprising the through-contact elements having through-contact pins that have spring-guided test tips that project from a top and a bottom, opposite the top, of the respective device component of the test apparatus.

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43. (New) The test apparatus as claimed in claim 42, comprising the through-contact elements having a tubular central piece which has test tips at its ends, with a spring element arranged in the central piece elastically cushioning the test tips.
44. (New) The test apparatus as claimed in claim 43, comprising the stamp is configured for simultaneously pressing the through-contact elements onto the contact pads of the back of the semiconductor device, the external through-contact elements of the test socket onto the test printed circuit board, and the internal through-contact elements of the test socket onto the test printed circuit board and onto the contact pads of the top of the semiconductor device.
45. (New) The test apparatus as claimed in claim 44, comprising where the stamp is fitted on a pivot arm that pivots the stamp into a test position in which the pivot arm having the stamp is oriented such that the through-contact elements are simultaneously pressed against the provided contact points of the test apparatus and of the semiconductor device.
46. (New) The test apparatus as claimed in claim 45, comprising where the locating seat has a central opening which corresponds to an optical sensor region of the semiconductor device and which is accessible from outside of the test apparatus.
47. (New) The test apparatus as claimed in claim 46, comprising where the opening is an irradiation opening which allows the semiconductor device to be irradiated.
48. (New) A test apparatus for testing a semiconductor device having contact pads on its top and contact pads on its back, where the test apparatus comprising:
- a test socket mounted on a test printed circuit board, where the test socket has a locating seat for locating the top of the semiconductor device, and where the region of the locating seat contains internal through-contact elements through the test socket to the test

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printed circuit board in order to make an electrical connection between the contact pads of the top of the semiconductor device and the contact pads of the test printed circuit board;

means for stamping; and

means for providing external through-contact elements which are arranged outside of the locating seat and which make an electrical connection between contact pads on the test printed circuit board and contact pads on the back of the semiconductor device.